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10/812,322	03/29/2004	Chirag Deepak Dalal	VRT0125US	2702

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

PTOL-90A (Rev. 04/07)

	Application No.	Applicant(s)
Office Action Summary	10/812,322	DALAL ET AL.
	Examiner	**Art Unit**	
	Thanh D. Vo	2189	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>27 February 2007</u>.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-27</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-27</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

1.   This Office Action is responsive to the Appeal Brief filed on February 27, 2007.

Claims 1-27 are presented for examination. Claims 1-27 are pending.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 13-27 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

As per claims 13 and 18, the system as being claim "can be implemented, individually and/or collectively, by a wide range of hardware, software, firmware, or any combination thereof" (Paragraph [0064]). Therefore, the means and modules of claims 13 and 18 can be software *per se* (see paragraphs [0064] and [0065]) and is directed to a non-statutory subject matter.

As per claim 23, on paragraph [0065] of the specification applicant has provided evidence that applicant intends the medium to include signals (i.e. signal bearing, communication links, and transmission type media) as such the claim is drawn to a form of energy. Energy is not one of the four categories of invention and therefore this claim is not statutory. Energy is not a series of steps or acts and thus is not a process. Energy is not a physical article or object and as such is not a machine or manufacture. Energy is not combination of substances and therefor not a composition of matter.

All dependent claims are rejected as having the same deficiencies as the claims they depend from. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3.   Claims 1-9 and 13-28 are rejected under 35 U.S.C. 102(a) as being unpatentable

by Soejima et al. (2003/0074528).

As per claims 1, 13, 18, and 23, Soejima et al. disclosed a system or method

comprising:

determining a first specification for a first set of storage regions (page 2, par.

[0018]), wherein the first set of storage regions is needed to perform an operation on a

logical volume (page 2, par. [0017]), and the first set of storage regions satisfies an

intent of the logical volume (page 2, par. [0019]);

searching a plurality of existing storage regions for a corresponding storage

region for each storage region in the first set of storage regions (page 2, par. 0022, lines

1-6, and par. 0024); and

if no existing storage region is found corresponding to a first storage region in the

first set of storage regions, determining a second specification for a second set of

storage regions. *See Fig. 4, step 4007 and Fig. 6, steps 6002-6006, wherein an*

alternate plan is executed if the specification was not satisfied in Fig. 4, step 4007 and a

new specification is set in Fig. 6 to determine if there are other storage regions that

satisfied the new specification. See corresponding figure descriptions in specification

for further clarification.

As per claims 2, 19, and 24, Soejima et al. disclosed a method, wherein the

second set of storage regions comprises at least the first storage region (*see Fig. 6, if*

there is not enough of unoccupied area satisfying the first requested capacity and

access time (first specification) then it will search using an alternate plan (second

specification). The method of looking for unoccupied area using a second specification

shows that the second set of storage regions also comprises partial region of the first

storage region that satisfies the first specification, see Fig. 9, 10, 11a-b, since the

second set of storage regions is a combination of first and second specifications to

search for available storage area.

As per claims 3, 20, and 25, Soejima et al. disclosed a method, wherein the

second specification for the second set of storage regions comprises an attribute of the

first storage region (See Fig. 9-10, the attribute such as access time and

demand/second are common/shared between the first and second storage regions),

and a connection between the first storage region and a storage object in the logical

volume *is an inherent feature of Soejima et al. since it is required in storage system to*

have a connection/pointer indicating which storage region in a logical volume where the

storage object is being stored at in order to retrieve or delete the data whenever it is

required.

As per claims 4 and 14, Soejima et al. disclosed a method further comprising:

using the second specification to acquire a third set of storage regions. See Fig.7

As per claims 5 and 15, Soejima et al. disclosed a method, wherein the third set of storage regions is a subset of the second set of storage regions. Claims 5 and 15 are rejected under the same rationale as claims 2, 19, and 24 since searching for another unoccupied storage region as disclosed in Fig. 9-10 and Fig. 11a-b is a process of searching for remainder of unoccupied area wherein the remainder of the unoccupied area is a subset of the previously selected area.

As per claims 6, 16, 21, and 26, Soejima et al. disclosed a method further comprising:

acquiring the second set of storage regions (page 3, paragraph 0041, lines 1-12); and

performing the operation on the logical volume using the second set of storage regions. *See Fig. 3 and corresponding figure description in specification regarding operation of creating the logical volume.*

As per claim 7, Soejima et al. disclosed a method, wherein the second set of storage regions satisfies the intent of the logical volume (page 2, par. [0019]).

As per claims 8, 17, 22, and 27, Soejima et al. disclosed a method further comprising:

determining a third specification (page 2, paragraph 0023), where in the

determining the third specification comprises specifying an existing storage region of the

plurality of existing storage regions to reserve for performing the operation (page 2,

paragraph 0024).

As per claim 9, Soejima et al. disclosed the second set of storage regions

excludes a second storage region in plurality of existing storage regions. See Fig.

11(a), wherein parity group 1 (comprising storage regions) does not include the physical

disks (comprising storage regions) that are in parity group 2.

As per claim 28, Soejima et al. disclosed a computer system comprising:

a processor (Fig. 2); and

the computer-readable medium of claim 25 (see claim 25 rejection in respect to

Soejima et al.)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Soejima et al. (2003/0074528) in view of Applicant Admitted Prior Art (hereinafter

AAPA).

As per claims 10, 11, and 12, Soejima et al. did not explicitly disclosed a method wherein the operation comprises increasing a size of the logical volume, evacuating data from the logical volume, or relocating data of the logical volume.

However, AAPA disclosed the operation such as increasing the size of a logical volume, evacuating data from the logical volume, or moving a logical volume to a different physical location. See page 2, paragraph 0004, lines 5-7 of the Specification of AAPA. It would have been obvious to one having an ordinary skill in the art at the time of the Applicant's invention to realize that it is advantageous to apply the invention of Soejima et al. into said operations since the system will operate automatically without requiring a storage administrator to keep track of how particular volumes are implemented and enable the intent of a logical volume to be consistently maintained while avoiding common errors that might caused by the administrator.

RESPONSE TO ARGUMENT

5.   Applicant's arguments filed on the Appeal Brief have been fully considered but they are not persuasive.

Although the application is now under a Non-Final Action but Examiner would kindly reminded Applicant that the summary of the claimed subject matter of claim 13 merely point to a generic paragraphs. They do not particularly point out the structure that performs the means. Therefore, the Appeal Brief can be held defective.

Applicant's argument, on page 5, paragraph 1 that Soejima does not teach or suggest that (1) the request include a specification of a first set of needed storage region and (2) the storage regions are needed to perform an operation on a logical volume/existing volume;

With respect to (1):

In paragraph [0018], Soejima discloses a volume management method includes a step of receiving a request to create a logical volume over a physical storage device, wherein the requirements comprise the information regarding the storage capacity and average performance. The storage capacity is the amount of storage area that the manager wants to create from the storage device and the average performance is the average access time to said storage area in said storage device. Therefore, the request includes a specification of a first set of needed storage region; wherein the specification comprises the storage capacity and the average performance, and the first set of needed storage region is the storage area in the storage device which the volume manager set to be created.

With respect to (2):

In paragraph [0017], Soejima discloses a volume management method that creates a logical volume over the physical storage devices. The steps of creating the logical volume include the step (1) discussed above. In order for the system to perform a read or write onto a logical volume above, a storage area is needed to be reserved from the storage device by specifying the storage capacity that is required. Therefore, a

storage area is needed to perform an operation on a logical volume, wherein the operation comprises the method of reading or writing.

Applicant's argument, on page 5, paragraph 2 that Soejima does not teach or suggest (3) the first set of needed storage regions satisfies an intent of the logical volume.

In respond to the argument, paragraphs [0017] and [0018] of Soejima teach a method of creating a logical volume over a physical storage device with a specified storage capacity and average performance. Paragraph [0019] discloses a method of finding an unoccupied storage area that satisfies the request to create a logical volume; and a logical volume is created using a storage area that matches or satisfy with the required storage capacity and average performance. By doing so, the storage area in the storage device has to satisfy an intent or a purpose of the logical volume, wherein the intent or the purpose of the logical volume can be a read or write command to the logical volume or a requirement of a logical volume that is needed to satisfy.

Applicant's argument, on page 5, paragraph 3 that Examiner fails to address the Applicant's argument that information about storage capacity and average performance is not "a specification" of a set of needed storage region. However, Applicant failed to explain how the information about storage capacity and average performance is not equivalent to a "specification" of a set of needed storage region. It is noted that the meaning of the term *specification* is defined as a description of a matter or a subject.

Therefore, a storage capacity and average performance are descriptions of requirement.

Applicant's argument, on page 6, paragraph 1 that the "intent" identified by Examiner is not what the Applicant's specification defines "intent" to be. However, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Based upon the broadest and the most reasonable interpretation, the term "intent" used in the language format presented in claim 1 is reasonably referring to the intention to have a storage volume is to store data to and to retrieve data from once it is stored.

Applicant's argument, on page 6, paragraph 2 that Soejima does not teach (4) *the method of searching existing storage regions for a corresponding existing storage region for each needed storage region in the first set* of needed storage regions. Applicant further arguing away from the teaching of the prior art in paragraph 0022 and 0024 by stating that Examiner appears to equate the claimed "first set of needed storage regions" with the information in Soejima's "request".

With respect to (4):

Applicant is respectfully reminded that the invention of Soejima is to create a logical volume over a physical volume using a specified storage capacity and average performance and the paragraph 0022 is cited to point out that the reference is still

referring to the same invention. Paragraph 0024 discloses a method of judging whether or not all volumes, which include existing volumes and new volume supposed to be added to the existing volumes, each satisfy its requested average performance. By doing so, the volume manager has to search in a plurality of existing volumes for a corresponding volume in the plurality of existing volumes for a storage area that is needed to create a first set of logical volume.

Applicant's argument, on page 7 that Soejima does not teach (5) determining a second specification for a second set of storage regions to be acquired if no existing storage region is found.

With respect to (5):

As shown in Figure 4, steps 4003 to 4007 discloses that if unoccupied storage area does not exist (refer to the discussion (4)) an alternate plan 4007 is needed. Figure 6 is to further discloses how Soejima is to search for a second set of storage regions if it failed to do so in the steps of Fig. 4. The second specification comprises a different requested capacity and average access time (step 6001). It is going to take the search result as an alternative plan (6007) if it met the requirement, otherwise the specification requirement is reduced again (6003) and the rest is self-explanatory.
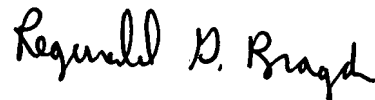
Conclusion

Any inquiry concerning this communication or earlier communications from the
examiner should be directed to Thanh D. Vo whose telephone number is (571) 272-
0708. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Reginald G. Bragdon can be reached on (571) 272-4204. The fax phone
number for the organization where this application or proceeding is assigned is 571-
273-8300.

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Thanh D. Vo
Patent Examiner
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7/6/2007

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